

## 27MnCrB5-2 All

### General Information

#### WR-Steel®

(Wear resistant ) WR-steel, stands for wear-resistant steel. This group of steel includes a broad range of grades with a wide range of hardness levels 350 – 650 HV, dimensions and steel grades designed to give you a wear-resistant advantage when making product exposed to a high degree of wear and where service life is important. WR-steels are characterised by consistent properties and cost effectiveness due to optimized alloy content for different end applications.

For additional Heat Treatment Data, please visit the Heat Treatment Guide.

### Similar designations

27MnCrB5-2, 28MnCrB5-2, 29MnCrB5-2, BCM 311

### Chemical composition

Variant	Cast	Di	Weldability		C%	Si%	Mn %	P%	S%	Cr%	Ti%	Al%	B%
SB28M13CB (SB9667)	CC	2.4	CEV 0.62 <sub>max</sub>	Min	0.28	0.15	1.10	-	-	0.25	-	-	0.0020
			Pcm 0.41 <sub>max</sub>	Max	0.33	0.40	1.50	0.030	0.030	0.60	-	-	0.0050
SB27M12CB (SB9660)	CC		CEV 0.58 <sub>max</sub>	Min	0.25	0.15	1.00	-	-	0.30	-	-	0.0010
			Pcm 0.39 <sub>max</sub>	Max	0.30	0.35	1.40	0.035	0.035	0.60	-	0.040	0.0060
SB28M12CB (SB9652)	CC		CEV 0.6 <sub>max</sub>	Min	0.24	0.10	1.10	-	-	0.30	0.020	-	0.0008
			Pcm 0.4 <sub>max</sub>	Max	0.30	0.40	1.30	0.035	0.035	0.60	0.050	-	0.0050
5465 (BCM311)	CC		CEV 0.58 <sub>max</sub>	Min	0.24	-	1.10	-	-	0.30	-	-	0.0008
			Pcm 0.39 <sub>max</sub>	Max	0.30	0.40	1.40	0.025	0.035	0.60	-	-	0.0050
27MnCrB5-2 EN ISO 683-2	Std		CEV 0.58 <sub>max</sub>	Min	0.24	-	1.10	-	-	0.30	-	-	0.0008
			Pcm 0.39 <sub>max</sub>	Max	0.30	0.40	1.40	0.025	0.035	0.60	-	-	0.0050

## Mechanical Properties

Variant	Condition	Format	Dimension [mm]	Yield strength min [MPa]	Tensile strength [MPa]	Elongation A <sub>5</sub> [%]	Reduction of area Z <sub>min</sub> [%]	Hardness	Impact (ISO-V) strength <sub>min</sub>
SB28M13CB (SB9667)	+QT	All formats	14 typical	880	950-1025	12	45	-	-
	+AR	Flat bar	5 < 20	530**	775 typical	17	-	< 275 HB	-
		Flat bar	5 < 20	-	-	-	-	250 HB typical	-
		Flat bar	20 < 70	430**	650-730	17	-	< 265 HB	-
SB28M12CB (SB9652)	+AR	Flat bar	20 < 70	-	-	-	215 HB typical	-	
SB28M12CB (SB9652)	+AR	Flat bar	15 < 60	-	-	-	< 240 HB	-	
5465 (BCM311)	+AR	Round bar	< 90	-	-	-	-	< 250 HB	-
	+QW	Round bar	70 typical	850	1050-1300	10	45	33-41 HRC	20 °C 30 J (long)
	+QT	Round bar	70 typical	700	800-1000	14	55	22-31 HRC	20 °C 70 J (long)

$R_{p0.2}$  \*  $R_{eh}$ , \*\*  $R_{eL}$

BCM 311 +QT tempered at 500°C

## Transformation temperatures

	Temperature °C
MS	382
AC1	720
AC3	786

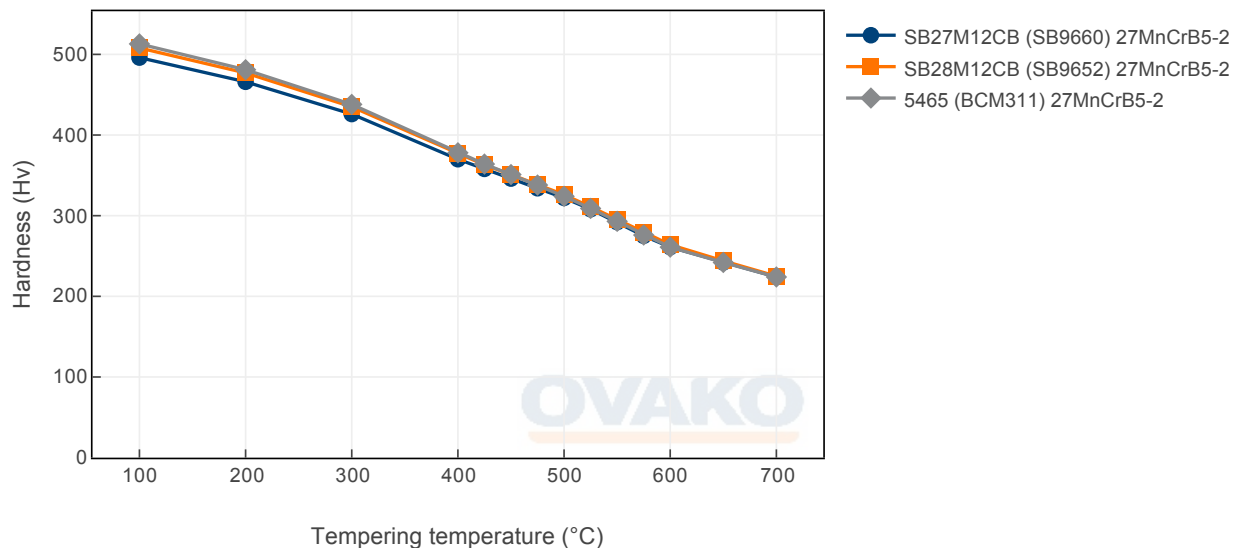
## Heat treatment recommendations

Treatment	Condition	Temperature cycle	Cooling/quenching
Quench & Tempering	+QT	880 - 910 °C	in water or oil

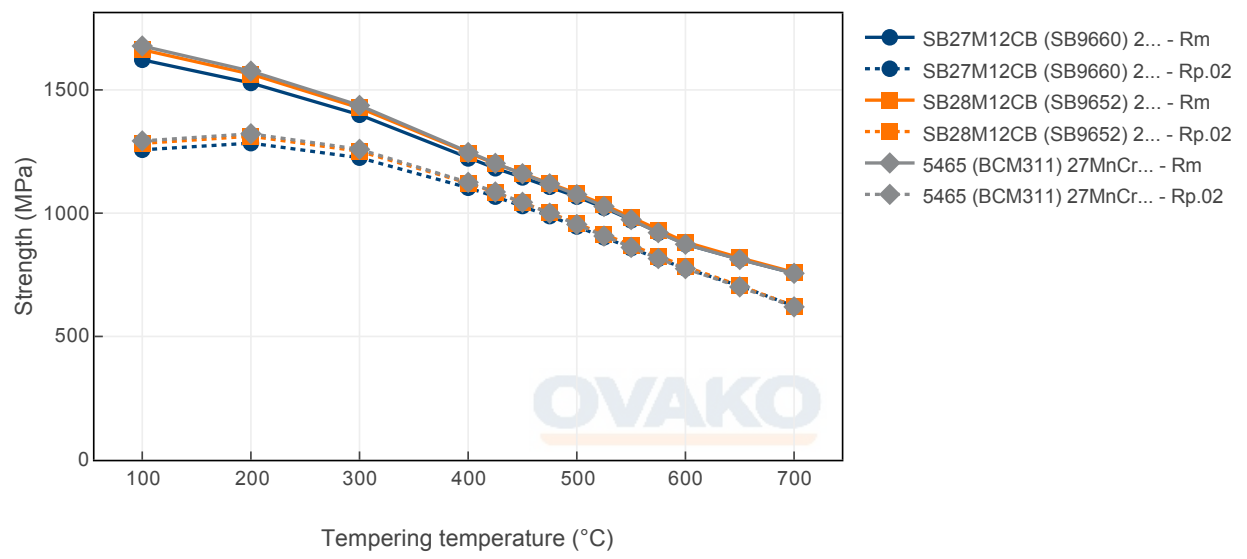
## Heat Treatment Guide generated Graphs

The following graphs are generated from a theoretical model. For further info see the Heat treatment guide module. Select a specific grade version for individual display.

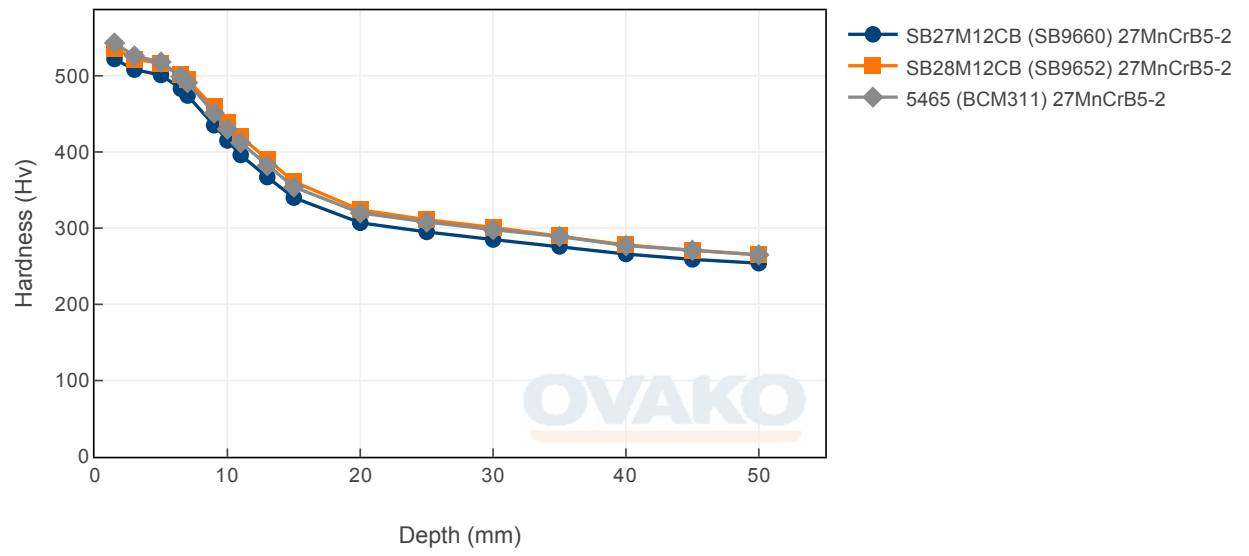
Tempering Diagram (hardness)



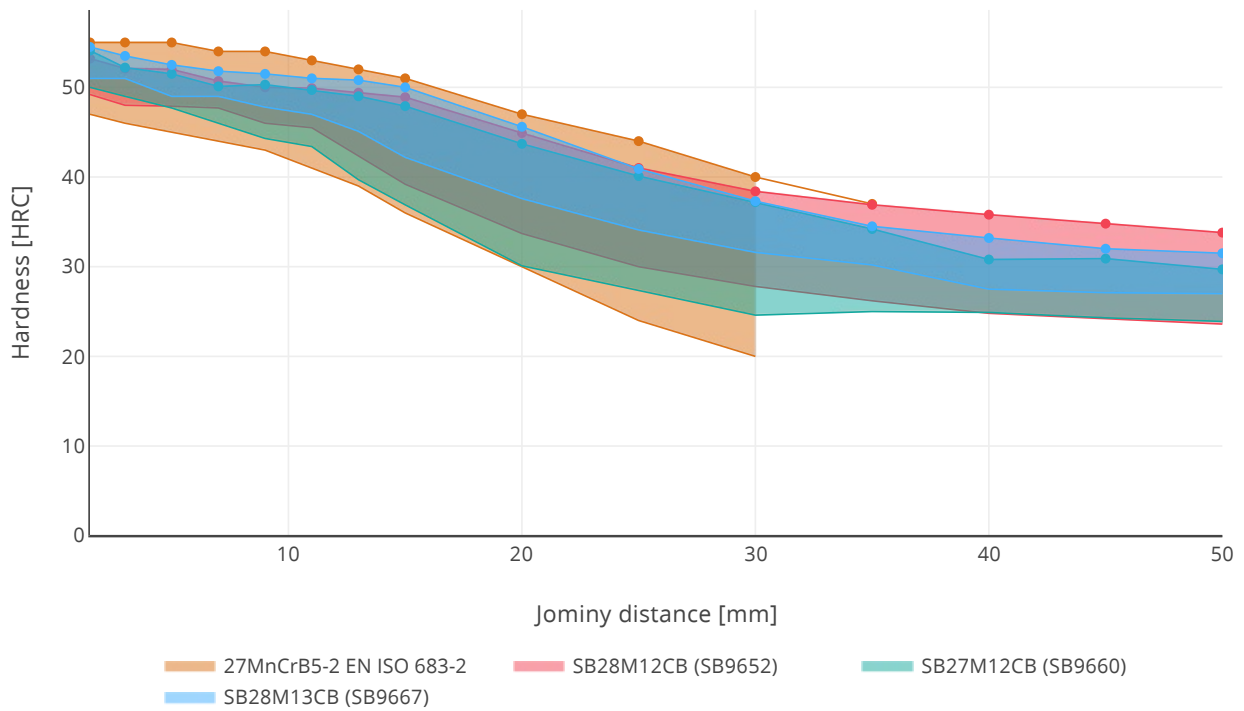
Tempering Diagram (strength)



# Jominy



## Hardenability



## SUSTAINABILITY-ENVIRONMENTAL IMPACT DATA

At Ovako sustainability and reduction of our environmental impact is a major focus in everything we do. Further information is found [here](#).

In many international comparisons the crude steel Scope 1-2 emission is a key parameter, ie. the CO<sub>2</sub> emission from the steel works itself.

As of 1 January 2022 we carbon offset all our scope 1 and 2 volume shown below.

Steel works	Hofors	Smedjebacken	Imatra
CO <sub>2</sub> e/kg	120	62	76

To get the full picture of our products environmental impact we have to look at all of our CO<sub>2</sub> emission sources. Not only the steel work Scope 1-2 itself, but all operations downstream in our production, heating and heat treatment furnaces etc (full scope 1-2) as well as all the emission from input material, eg. alloys, scope 3.

Steel Grade	Format	Condition	Scope 1-3 (CO <sub>2</sub> e kg /1000 kg steel)	Climate compensated Net emission = Scope 3 (CO <sub>2</sub> e kg /1000 kg steel) Scope 1 - 2 = 0 (compensated)
SB27M12CB (SB9660)	Flat bar	+AR	508	191
SB29M13CB (SB9667)	Flat bar	+AR	376	189
SB28M12CB (SB9652)	Flat bar	+AR	497	191
5465 (BCM311)	Round bar	+AR	500	220

As of 1 January 2022 we use carbon offset for all our scope 1- 2 emissions, so in practice the climate compensated data is the same as the full Scope 3 level.

All above data are to be seen as typical values for the specified format and condition. Detailed information about your specific product please contact your sales contact.

[Other properties \(typical values\)](#)

Youngs module (GPa)	Poisson´s ratio (-)	Shear module (GPa)	Density (kg/m3)
210	0.3	80	7800
Average CTE 20-300°C (µm/m°K)	Specific heat capacity 50/100°C (J/kg°K)	Thermal conductivity Ambient temperature (W/m°K)	Electrical resistivity Ambient temperature (µΩm)
12	460 - 480	40 - 45	0.20 - 0.25

## Contact us

Would you like to know more about our offers? Don´t hesitate to contact us:

Via e-mail: [info@ovako.com](mailto:info@ovako.com)

Via telephone: +46 8 622 1300

For more detailed information please visit <http://www.ovako.com/en/Contact-Ovako/>

## Disclaimer

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